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Bagged Chemical Admixtures: How to use onsite admixtures to increase workability and finishability, yet maintain water-cement ratio. **2 pp; 92:599**

AGGREGATES

Properties and Uses for Emery and Ferro-silicon Aggregate in Industrial Floors: Discusses benefits of these two toppings and how to apply them using dry-tamp and shake-on techniques. **3 pp; 92:308**

CERTIFICATION

ACI Concrete Flatwork Finisher Certification at World of Concrete® '93: Gives details about the morning training course and afternoon certification examination. **2 pp; 92:840**

Commercial Driver's License Required by April 1992: An overview of the Commercial Driver's License (CDL) general knowledge test, skills tests (pretrip inspection, basic control skills, and road test), and other CDL requirements. **1 p; 92:135**

CLEANING CONCRETE

Cleaning Concrete: An overview of various cleaning methods, including brushing, washing, steam cleaning, high-pressure washing, chemical cleaning, abrasive blasting, flame cleaning, and safety concerns. **5 pp; 92:791**

COLD-WEATHER CONCRETING

Cold-weather Concreting Study: Details work on an Ithaca, N.Y., library where concrete was placed in temperatures as low as 10° F, and the computer-based system used to monitor quality control. **4 pp; 92:458**

Protecting Fresh Concrete from Freezing Weather: Examines the causes of damage when fresh concrete freezes, how soon concrete can freeze safely, exposure to multiple freeze-thaw cycles, and how to tell if fresh concrete has been damaged by freezing. **2 pp: 92:126**

Reusable Protection System Blocks Wind: Describes a reusable fiber-reinforced, polyethylene-sheeting scaffold enclosure system. Built-in grommets are used to join sheets and attach sheeting to scaffolding. **2 pp; 92:219**

CORROSION

Corrosion Protection for Reinforced Concrete: Discusses why reinforcing steel corrodes, good concreting practices, no-slump concrete, latex-modified concrete, silica-fume concrete, membranes and sealers, cathodic protection, and organic and inorganic corrosion inhibitors. **4 pp; 92:230**

CRANES

Truck-mounted Cranes are Versatile Lifting Machines: Explains how truck-mounted cranes are used, their features, matching boom to truck, and rent or purchase options. **3 pp; 92:91**

EDUCATION

Concrete in the Classroom: Explains how concrete kits were prepared and used for educational purposes in grade school classrooms in Illinois. **2 pp; 92:392**

EFFLORESCENCE

Efflorescence: Explains the efflorescence process and how to control and remove efflorescence. **2 pp; 92:249**

FIBERS

Synthetic Fibers: Examines how polypropylene, nylon, and polyester fibers control shrinkage cracking and other ways they enhance concrete performance. Also discusses fiber types, tips on using synthetic fibers, fiber vs. wire mesh, and fibers in shotcrete and precast concrete. **4 pp; 92:525**

FINISHING

Finishing Non-bleeding Concrete: Discusses the effects of pozzolans, traditional finishing, properties of non-bleeding concrete, plastic shrinkage cracking, immediate curing, and trial placement. **2 pp; 92:386**

FLOORS

Bidding and Building to F-number Floor Specs: Contains summaries of surface flatness and levelness tolerances for different floor quality levels. Also explains typical uses, specification requirements, forming and strikeoff requirements, finishing procedures, and cost factors. **2 pp; 92:18**

Building Superior Quality Elevated Floors: Shows how effective preconstruction planning and during-construction monitoring were used to construct three elevated slabs on metal decks totaling 1.4 million square feet. **3 pp; 92:285**

Control of Shrinkage and Curling in Slabs on Grade: Part 1 of 3 discusses causes and cures. **6 pp; 92:825.** Part 2 discusses how to deal with warping and curling. **5 pp; 92:883**

Effect of Design Variables on Floor Thickness Requirements: Explains how concrete strength, subgrade strength, base thickness, and changes in safety factor affect floor design. **2 pp; 92:13**

How to Select the Best Coating System for Concrete Floors: Explains how to evaluate floor surfaces, consider performance conditions, specify coating type and thickness, review material properties and application procedures, and choose an experienced installer. **3 pp; 92:20**

New Floor Profile Measuring Machine Introduced: Examines how a self-propelled floor profiling device gives 10-foot straightedge analysis, wave height report, F-numbers, and ASTM ride numbers. **2 pp; 92:312**

Soil Information Needed for Slab Design: Explains how to establish subgrade modulus, special precautions for fine-grained soils, modification of problem soils, fill recommendations, and reducing the designer's risk with limited information. **2 pp; 92:289**

FLY ASH

Thermal Processor Burns Off Carbon to Reduce Fly Ash Variability: Gives details on a prototype processor that burns off carbon and reduces loss on ignition (a low fly ash carbon content helps concrete producers maintain consistent air content). **3 pp; 92:114**

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Blind-side and One-sided Forming: Explains how to avoid bulges, blowouts, and out-of-tolerance walls by using bracing, specialty accessories, and prefabricated formwork components. **3 pp; 92:450**

Concrete Imitates Stone: Details construction of a retaining wall built to resemble cut stone. System uses styrofoam boards as form liners and chamfered wood strips to create imitation mortar joints. **1 p; 92:486**

Custom Forms—Tailored to Your Job Specifications: Explains why contractors should consider using custom forms. Also discusses custom form costs, what to expect from custom form suppliers, understanding custom forms, and concrete construction and form fabrication tolerances. **4 pp; 92:223**

Faster Form Removal: Details how different types of tests can be used to determine in-place concrete strength, thus facilitating more rapid form removal. **3 pp; 92:591**

Galvanized Tubular Steel Beams Provide Formwork Support: Explains how a proprietary steel beam, weighing less than 4 pounds

per foot, is used to support plywood in wall and deck forming applications. **2 pp; 92:466**

Insulated Aluminum Formwork System: Examines a proprietary design said to reduce the need for walers and for curing precautions in hot or cold weather. **2 pp; 92:728**

Polystyrene Wall Forms Assemble in a Snap: Examines a proprietary hollow-core, interlocking polystyrene form system with built-in recesses for horizontal reinforcement and an R value of 22. **2 pp; 92:207**

Reusable Deck Forms Speed Bridge Construction: Details construction of a 1.4-mile-long Florida bridge with 42 spans, each using 142-foot girders. Discusses form costs, setup, and stripping. **3 pp; 92:108**

Stay-in-place Insulating Forms for Commercial Building: Details how expanded polystyrene blocks with cavities were used to construct a 40x100-foot warehouse addition with 16-foot-high walls. **4 pp; 92:297**

Taking a New Look at Form Lumber: Gives an overview of new design values for dimension lumber, based on actual performance of full-size specimens, and their incorporation into building codes. **4 pp; 92:719**

VOC-compliant Form Release Agents: Examines advantages and limitations of water-based agents, analyzing material, and delivery and application costs. **2 pp; 92:723**

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Foundation Waterproofing has 100-year Life Expectancy: Discusses properties and application procedures of proprietary spray-on rubber polymer product. **2 pp; 92:454**

Prefabricated Drainage Systems Keep Foundations Dry: Describes several types of prefabricated drain systems and their advantages and limitations. **4 pp; 92:445**

GROUTING

Polyurethane Grouts: Lists grout types and properties, and explains how polyurethane grouts are used to control expansion. Also describes how to use injection equipment and installation techniques. **4 pp; 92:551**

GROOVING AND GRINDING

New Tool for Grooving or Grinding Pavements: Explains the operation of a proprietary machine that uses replaceable straps mounted on an 8-inch-diameter drum. **2 pp; 92:561**

HIGH-PERFORMANCE CONCRETE

High-performance Concrete Becoming a Practical Option: Discusses the pros and cons of high-performance concrete. **2 pp; 92:351**

High-performance Concrete Durability Affected by Many Factors: Discusses transition zone effects, causes of durability problems, materials for durable high-performance concrete, and effects of mix proportions, production, and construction. **4 pp; 92:367**

High-performance Concrete Meets Stringent Requirements: Discusses mix designs for four projects: a religious shrine in Colorado, a waste management facility in Tennessee, a paper plant in North Carolina, and a mobile offshore drilling structure. **3 pp; 92:371**

High-performance Concrete: Present and Future: Reviews present uses of high-performance concrete and examines its future influence. **2 pp; 92:355**

High-performance Concrete Production Creates New Challenge: Explains challenges associated with high-performance concrete mix design, production, and placing. **3 pp; 92:359**

HIGH-RANGE WATER REDUCERS

Water-cement Ratio, Water Reducers, and Finishability: Explains how capillary voids affect water-cement ratio and curing, and how high-range water reducers work. **1 p; 92:315**

HIGH-RISE CONSTRUCTION

High-performance Concrete Plays a Key Role in Atlanta Tower construction: Details construction of the 54-story GLG Grand office building, where each floor was completed in a 3-day cycle. **3 pp; 92:81**

One Peachtree Center Dominates Atlanta Skyline: Details construction of a 62-story, concrete-frame office tower using 12,000-psi concrete and how a 4-day floor construction cycle was achieved on 24,000-square-foot floors. **2 pp; 92:71**

HISTORY

America's First Concrete Segmental Bridge: Details construction of the Griffith Road Crossing in Wyoming County, N.Y., in 1950. Single-span bridge is 50 feet long by 24 feet wide. **2 pp; 92:318**

Early Continuous Mixer was Powered by Gravity: Patented in 1899, mixer used gravity to do the mixing. **1 p; 92:620**

Encore: Historic Columbia River Bridges: Reviews the book *The Columbia: America's Great Highway,* by Samuel Lancaster. Article contains pictures of eight bridges along the Columbia River Scenic Highway. **2 pp; 92:244**

Going to Sea in Concrete: Details the history of concrete shipbuilding from 1848 to present. **6 pp; 92:470**

Hennepin—First U.S. Canal to Use Concrete for Locks, Dams, Viaducts: Built from 1891 to 1907, this 75-mile-long Illinois canal had 33 concrete locks and connected the Mississippi and Illinois Rivers. **4 pp; 92:729**

Repairing Early Concrete Structure: Details efforts by Indiana concrete enthusiasts to restore a 1904 spring house, flume, pool, and bas-relief sculpture. **2 pp; 92:396**

HOT-WEATHER CONCRETING

Hot Weather Affects Fresh Concrete: Examines hot-weather concreting practices, including increased water demand, slump loss, rate of setting, cooling concrete, and chemical admixtures. **2 pp; 92:523**

JOINTS

How to Seal Joints in Concrete Structures: Summarizes ACI 504R-90, "Guide to Sealing Joints in Concrete Structures," detailing joint sealant materials, design, and installation. **4 pp; 92:799**

Jointing of Concrete Floors: How to install isolation, contraction, and construction joints for effective crack control. **4 pp; 92:532**

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Automatic vs. Conventional Levels: Compares features, setup time, accuracy, ease of use, and operating economy of automatic and conventional levels. **2 pp; 92:301**

MANAGEMENT

Growing Your Company: Part 1 of 4 details how to use growth strategies to survive and prosper. **3 pp; 92:755.** Part 2 discusses understanding buyers' needs and how to offer what buyers want. **3 pp; 92:842.** Part 3 explains how to understand and meet customer needs. **3 pp; 92:893**

How to Hold Down the Cost of Construction Litigation: Explains the need for good documentation, use of witnesses, what to ask from your attorney, risk sharing, and partial contingency fees. **2 pp; 92:132**

Planning and Letting Go . . . Keys to Successful Business Succession: Planning includes defining company philosophy so it can be passed on to succeeding generations. Letting go involves accepting change as an essential ingredient of success. **2 pp; 92:15**

Total Productivity and Quality Management: Explains how Total Quality Management can be adapted to serve the needs of the construction industry. **3 pp; 92:897**

Research and Development Department Pays Off for Contractor: Examines how a

contractor uses an in-house research and development staff to lower costs, increase quality, and reduce construction problems. **2 pp; 92:25**

The Americans with Disabilities Act: Discusses provisions of the American with Disabilities Act and lists names, addresses, and phone numbers of organizations to contact for more information. **2 pp; 92:483**

MATERIAL HANDLING

How to Use Concrete Conveyors Effectively: Reviews conveyor capacity, efficiency, maintenance, and fine tuning. **2 pp; 92:375**

Site Dumpers Speed Debris Removal from Confined Area: Details how ride-on site dumpers were used to remove concrete rubble from a confined jobsite, then deliver ready mix concrete for a new floor. **2 pp; 92:605**

METRIC

Thinking Metric: An overview of the move to convert the United States to the metric system. Includes a table on construction metric units. **3 pp; 92:751**

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Mobile Volumetric Mixers Eliminate Waste: Explains how mixers allow contractors to produce concrete at the jobsite. Also covers features, selection, applications, and precautions. **3 pp; 92:595**

NOTABLE STRUCTURES

Concrete Supports Aquarium Expansion: Details construction of Chicago's Oceanarium, which contains a 2-million-gallon main pool surrounded by four smaller pools. **3 pp; 92:671**

Georgia Dome: Details construction of the world's largest cable-supported fabric dome. Cables are connected to a concrete box girder compression ring resting on 52 rectangular concrete columns. **3 pp; 92:75**

Gondola Interchange Buried Under Colorado Ski Slope: Explains the challenges and techniques of constructing a reinforced concrete building at an elevation of 11,600 feet. **5 pp; 92:556**

Tom Moreland Interchange Cures Atlanta Traffic Woes: Completed in 1987 at a cost of $86 million, this four-level interchange has 14 bridges, 34 retaining walls, and 12 ramps, and used 120,000 cubic yards of concrete. **2 pp; 92:87**

OVERLAYS

Ultra-thin Concrete Overlay Supports Truck Loads: Details a whitetopping experiment in Kentucky using overlays as thin as 2 inches. **3 pp; 92:664**

Whitetopped Driveway Performs Well: A follow-up report on a driveway in Michigan whitetopped in 1990 with a 3½-inch-thick concrete overlay. **2 pp; 92:668**

PAVING

Bridge Deck Paving and Finishing Machines: Covers the features, capabilities, options, and maintenance of several types of bridge deck paving machines. **3 pp; 92:836**

New California Warehouse Complex Receives RCC Pavement: Details construction of a 270,000-square-yard roller compacted concrete pavement. **2 pp; 92:481**

Permeable Bases Help Solve Pavement Drainage Problems: Explains how to mix, install, and test a cement-treated permeable base. **2 pp; 92:660**

Portland Cement Pervious Pavement Construction: Discusses applications, subgrade preparation, mixing, transporting, placing methods, compaction, joints, curing, and testing. **4 pp; 92:655**

Setting Stringline for Slipform Pavers: Explains how to select materials and tools, and set straight and radius stringline. **4 pp; 92:649**

PROBLEM CLINIC

January (1 p; 92:35)

- Fly ash not the cause of slab discoloration

February (2 pp; 92:135)

- How soon can concrete blocks be laid on a concrete footing?
- Definition of no-slump concrete
- What caused dark discoloration?

March (2 pp; 92:246)

- Small-diameter cores more likely to yield low strengths
- Bad-smelling mixing water may not harm concrete

April (2 pp; 92:321)

- Stamping mat produces detectable warnings
- Why use whitewash before whitetopping?
- Electrically heated forms

May (3 pp; 92:383)

- Why did algae growth skip one span of a bridge?
- Removing keel marks from formed surfaces

June (3 pp; 92:487)

- Timing joint sawing in cold weather
- How to tell if scaling is caused by deicing salts or finishing problems
- Causes of spot retardation

July (1 p; 92:564)

- Stains in precast panels
- Do stem walls chemically bond to footings?

August (1 p; 92:623)

- Algae growth mystery solved

September (2 pp; 92:677)

- Saving a non-air-entrained concrete slab
- When do you add water?
- Friction factor for concrete on concrete

October (1 p; 92:763)

- Bigger aggregate reduces curling
- Preventing trowel burns on white floors
- Effect of fly ash on setting time

November (1 p; 92:846)

- Understanding F-numbers for floor flatness and levelness
- Rebar near surface causes marks in slabs

December (2 p; 92:900)

- Granular bases under slabs on grade
- Form design for relatively low-strength concrete placed in cold weather
- Alternatives for superplasticizers

PUMPING

Guide for Pumping Lightweight Concrete: Gives suggestions for design engineers, general contractors, pumping contractors, concrete producers, and testing labs on designing, producing, testing, and pumping lightweight concrete. **2 pp; 92:96**

Pump Backfills 4,100 Feet of Tunnel Formwork from One Spot: Details how 3,640 cubic yards of concrete were placed in a Mexico City tunnel using a powerful concrete pump and a swinging distributor. **2 pp; 92:381**

Slickline for Pumping Concrete: Explains how to choose pipe, couplers, gaskets, bends, elbows, reducers, valves, and hose. **4 pp; 92:609**

Tips for Ordering Concrete Pumping Services: Discusses how to work with your con-

crete pumper and make pumping jobs run more smoothly. **3 pp; 92:104**

READY MIX

Working with Ready Mix Suppliers: Discusses how to order ready mix, mixing and delivery, uniformity, cement balls and head packs, and ready mix truck operation. **3 pp; 92:832**

REINFORCING STEEL

Reinforcing Steel in Slabs on Grade: Lists 11 advantages of using wire mesh or rebar. Also discusses general design process, positioning, and support. **3 pp; 92:538**

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Flood Soaks Chicago: Details emergency concrete repairs to a hole in a tunnel wall beneath the Chicago River in Chicago's Loop business district. **3 pp; 92:441**

Repair System Restores and Protects Reinforced Concrete: Shows how portland cement and latex-acrylic compounds are used to repair deteriorated concrete and protect steel reinforcement in the restored concrete. **2 pp; 92:211**

Tips for Concrete Pavement Repair: Details full- and partial-depth pavement repairs. **3 pp; 92:7**

SAFETY

A Win-win Model for the Construction Industry: How to use a team approach to involve and inform every worker, not only in safety, but in the overall project. **1 p; 92:28**

Backhoe-loader Safety: Lists safety guidelines for workers working near backhoe-loaders, including proper shovel usage and trench shoring and sloping procedures. **1 p; 92:589**

Cement Burns—A Continuing Calamity: Explains how cement burns occur and how to prevent them. **1 p; 92:130**

Control Accident Costs: How to implement an occupational injury management program to return injured employees to work as soon as possible. **1 p; 92:621**

Creating a Desire for Safety: Explains the need to include both incentives and disciplinary measures in safety programs. **1 p; 92:647**

Encourage Employees to be Responsible for Safety: Explains how to listen then respond, reinforce your message, and offer incentive programs. **1 p; 92:316**

Enforcing Lockout Can Save Lives: Explains why lockout is important to prevent accidents and injury. **1 p; 92:390**

Indirect Costs are a Major Portion of Jobsite Injury Costs: Details types of indirect costs and their impact. **1 p; 92:229**

OSHA's Here? What Now?: Lists four reasons why OSHA visits workplaces, and discusses non-formal and formal complaints. **2 pp; 92:675**

Safety Guidelines for Erecting Tilt-up Panels: Based on a report by ACI Committee 551. Topics include crane selection, site inspection, panel preparation, lift precautions, braces, and plumbing panels. **2 pp; 92:875**

Safety Must be Ongoing Priority, Even for Firms with Good Record: Details an accident where five workers on a foundation repair crew were hospitalized, and important lessons the owner of the repair company learned. **2 pp; 92:435**

Safety Quiz for Supervisors: Designed to help supervisors evaluate their on-the-job safety performance. **2 pp; 92:521**

Shore Concrete Formwork Safely: Explains how to design, erect, use, and dismantle shoring. Lists relevant Scaffolding, Shoring and Forming Institute publications. **2 pp; 92:717**

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Automated Saw Simplifies Joint Repair: Describes how a battery-operated, self-propelled, track-mounted saw is used to make perfectly straight and parallel cuts in concrete floors. **2 pp; 92:217**

Machine Makes Longitudinal Angle Cuts Through Concrete Curbs and Sidewalks: Describes how a track-mounted, 30-inch-diameter diamond saw cuts sloped driveway entrances and levels curbs and sidewalks. **2 pp: 92:213**

SCULPTURE

Building a Concrete Castle: Details how a 23-foot-tall concrete castle and surrounding rockwork were constructed for a Chicago-area miniature golf course. **2 pp; 92:881**

Building a Fiber-cement Redwood: Details how art students built a 14-foot-tall sculpture of a redwood tree by applying fiber cement to an armature of steel rods and wires. **2 pp; 92:304**

Custom Designs for Concrete Surfaces: Details how to create relief sculptures in concrete using inexpensive, disposable molds made from wood, polystyrene foam, and plaster of paris. **4 pp; 92:735**

SEALERS

Applying Penetrating Sealers to Concrete: A how-to guide covering delivery, storage, handling, environmental conditions, surface preparation, application, coverage, and safety precautions. **3 pp; 92:819**

SHOTCRETE

Use Miniaturized Concrete Pump for Wet Shotcrete Repair: Examines the features of a pump with a maximum capacity of 5 cubic yards per hour and how the pump was used to repair a parking garage. **2 pp; 92:378**

SHRINKAGE-COMPENSATING CONCRETE

Sell Shrinkage-compensating Concrete on its Merits: Discusses advantages of shrinkage-compensating concrete, its applications, and how it differs from conventional concrete. **4 pp; 92:614**

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Two Systems Simplify Recovery of Leftover Concrete: Compares two systems used to prevent leftover concrete from reaching initial set, allowing it to be recovered and recycled. **2 pp; 92:603**

TESTING

High-performance Concrete Quality Control Tests Challenge Labs: Discusses performance specifications; testing for strength, modulus of elasticity, durability, and dimensional stability; and finding a qualified laboratory. **2 pp; 92:363**

Questionable Concrete? Let Cores Prove Your Point: Explains core sampling basics, when and where to core, costs, core size, moisture conditioning, length-to-diameter ratio, end preparation, and capping. **3 pp; 92:437**

TILT-UP

Tilt-up Construction Goes Residential: Explains how techniques used to build commercial tilt-up buildings can be applied to residential structures. **3 pp; 92:120**

TROUBLESHOOTING

Troubleshooting Three Common Defects in Vertically Cast-in-place Concrete: Discusses the causes and prevention of cold joints, bugholes, and honeycombs. **2 pp; 92:879**

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Vapor Barriers Under Concrete Slabs: Explains vapor barrier performance, properties, and installation methods, and their effect on subgrade friction, concrete properties, and slab curling. **3 pp; 92:292**

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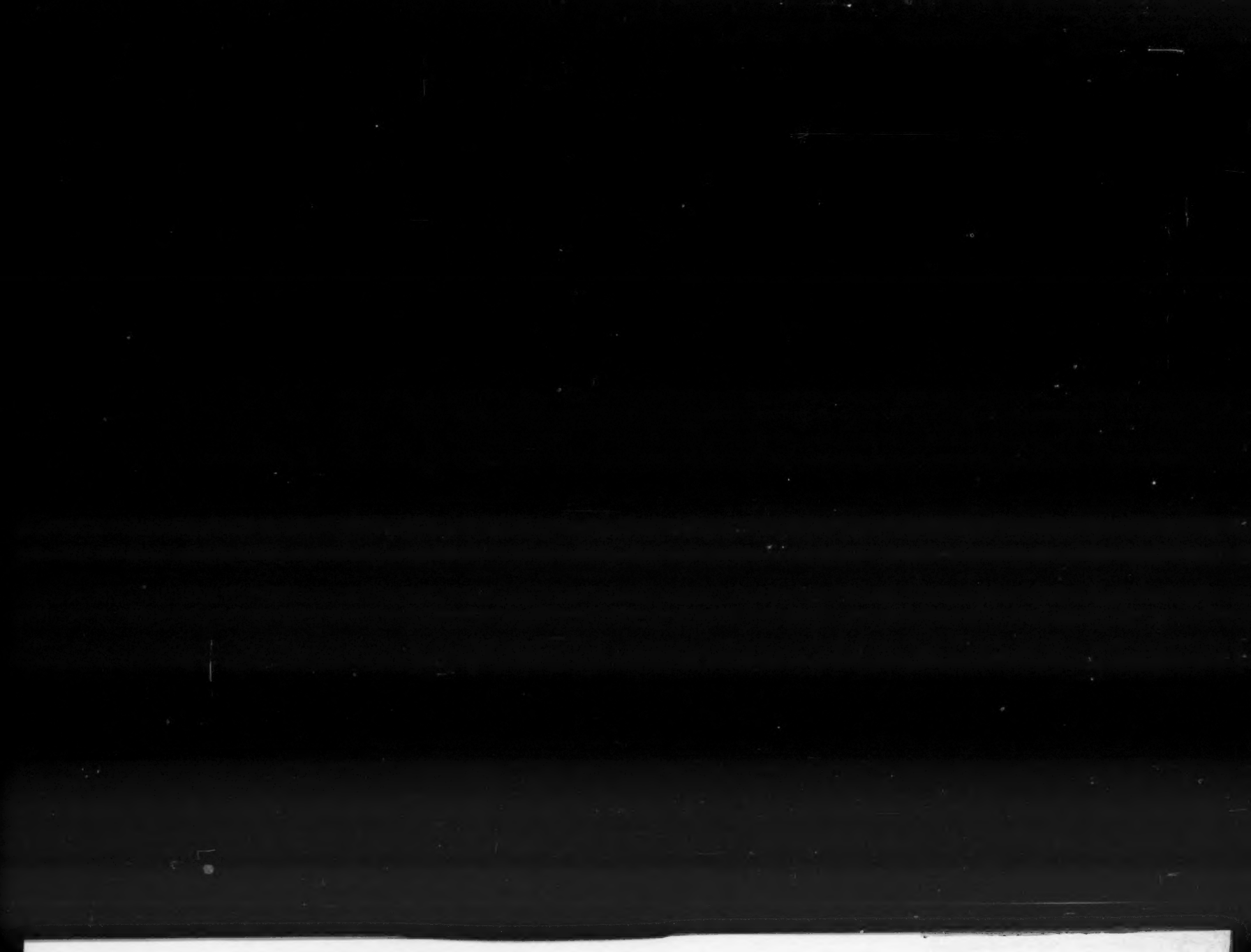
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